

142433

Wednesday, March 09, 2016 8:56:13 AM

Item ID:	D6104-007	Accept	*N900040100*	Setup	Start	*NS1*
Revision ID:						
Item Name:	Round Billet, 17-4				Stop	*NS2*
Start Date:	3/9/2016	Start Qty: 12.00	*12*	Cust Item ID:		
Required Date:	3/23/2016	Req'd Qty: 12.00	*12*	Customer:		
Reference:						

Approvals:	Process Plan:	DAS 13	Date:	MAR 09 2016	Tooling:	Date:	Run	Start	*NR1*
	QC:	9-89	Date:		SPC (Y/N):	Date:		Stop	*NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D6104	Rev B								
100		0.00							
100	PURCHASING								
Purchasing	Memo	0.00							
Purchasing	Issue P/O: <u>31638</u>								
	a) Description: S.S round billet								
	b) Ø4.50" x 5.10" long								
	c) Tolerance on all dimensions are +0.030"/-0.000"								
	d) Material: 17-4PH Stainless steel (Ams 5643 or Aisi 630)								
	e) One blank makes 2 parts								
	f) Material certification required								
110	Receive & Inspect for Damage & Mat'l Certs	0.00							
110									
Packaging	Memo	0.00							
Packaging	Ensure material certification is attached								

12 MAR 09 2016 9-59

12x SP16-03-14

Work Order ID 142433***142433***

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Wednesday, March 09, 2016 8:56:13 AM

Item ID: D6104-007 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Round Billet, 17-4
Start Date: 3/9/2016 Start Qty: 12.00 ***12*** Cust Item ID:
Required Date: 3/23/2016 Req'd Qty: 12.00 ***12*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	QC18 In-Coming Inspection Material	0.00				12	0		DAS 14 9-30 16/03/15
120									
QC	Memo	0.00							
Quality Control	Ensure Material certification comply to Dwg D6104								
130	Identify as per dwg & Stock Location: MATOVB	0.00				12	0		DAS 14 9-30 16/03/15
130									
Packaging	Memo	0.00							
Packaging									
140	QC21- Final Inspection - Work Order Release	0.00							16/11/15
140									
QC	Memo	0.02							
Quality Control									

MCJ

MAR 15 2016

Picklist Print

Wednesday, March 09, 2016 8:56:12 AM

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Work Order ID: 142433

142433

Parent Item: D6104-007

D6104-007

Parent Item Name: Round Billet, 17-4

Start Date: 3/9/2016

Required Date: 3/23/2016

Start Qty: 12.00

Required Qty: 12.00

Comments: IPP A: 01.05.08New Issue EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
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D6104-007P

Purchased

No

110

Each

0.0000

1

12

D6104-007P

17-4 SS Roundbar 4.50"Od

**

12 x 8p/16-03-14

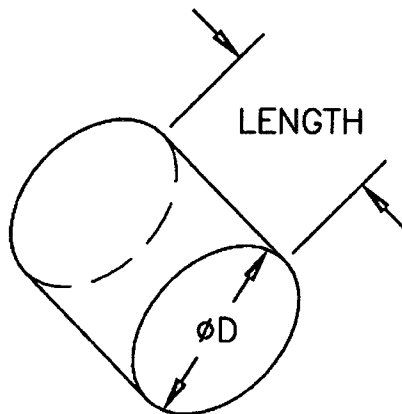


DESIGN RF	DRAWN BY [Signature]	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED [Signature]	APPROVED [Signature]	DRAWING NO. D6104	Rev. B SHEET 1 OF 1
DATE 02.11.25		TITLE ROUND BILLET, 17-4	SCALE NTS
A	01.04.10	NEW ISSUE	
B	02.11.25	CLARIFY ALLOY SPEC ADDED D6104-009/-011 REDUCE LENGTH OF BILLETS	

RELEASED

02.11.29 [Signature]

SPECIFICATION CONTROL DRAWING



DAS
13
9-0

MAR 09 2016

W10: 142433

MATERIAL: 17-4 PH SS (AMS 5643 OR AISI 630) MIN UTS = 170 KSI (38 HRC)

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES

Part No.	Alloy	D (Diameter)	Length
D6104-001	17-4 PH STAINLESS STEEL	Ø3.00	3.80
D6104-003	17-4 PH STAINLESS STEEL	Ø3.25	3.80
D6104-005	17-4 PH STAINLESS STEEL	Ø4.00	5.10
D6104-007	17-4 PH STAINLESS STEEL	Ø4.50	5.10
D6104-009	17-4 PH STAINLESS STEEL	Ø5.25	4.10
D6104-011	17-4 PH STAINLESS STEEL	Ø6.50	4.10

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Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO31638

Purchase Order Date 3/9/2016

PO Print Date 3/9/2016

Page Number 1 of 2

Order From :
METAUX CASTLE
P.O. BOX 4090 STN A
TORONTO, ONTARIO M5W OE9
CANADA

VU-MET002

Ship To : DART AEROSPACE LTD
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

E-MAILED

Contact Name

Vendor Phone

Ship To Contact

Ship To Phone

Ship Via:

Yours ppd

Ship Acct:

Buyer

Chantal Lavoie

Customer POID

Customer Tax #

10127-2607

Terms

Net 30

Currency

USD

FOB

Destination-Collect

MAR 09 2016

Line Nbr	Reference Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	CD	Req Qty/ Unit of Measure	PO Unit Price	Extended Price
Line Comments		Promise Date					
Delivery Comments							
1	D6104-007P	17-4 SS Roundbar 4.50"Od	3/23/2016		12.00	\$68.53	\$822.36
			Yes		Each		
			3/23/2016				
AS PER DWG D6104 REV. B							
B142433							
MATERIAL: 17-4 PH AS PER AMS 4643 OR AISI 630							
SIZE: 4.50" X 5.10" LONG							
C 2116-03-14f.							

Sp 16 B-14f.

Line Total: \$822.36

2	71401-45	PROCUREMENT QUALITY CLAUSES	3/23/2016	1.00	\$0.00	\$0.00
			No			
Procurement Quality Clauses			3/23/2016			
A005 right of entry						
A012 chemical and physical test report						
A016 personnel qualification						
A017 raw material identification						
A026 certification of material conformance						
A041 quality management system						
A042 dart notification by supplier						
A043 retention of quality documents						

Note:

3/9/2016

**Castle Metals®**

A. M. Castle & Co.

PACKING SLIP/
CERTIFICATE OF CONFORMANCE

Page 1 of 2

Shipment No:2911792

Ship From: A. M. CASTLE & CO. 2150 ARGENTIA ROAD MISSISSAUGA, ON L5N 2K7 CAN		Sold To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA		Ship To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CAN		Deliver To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA	
Date Shipped 11-MAR-16	F.O.B. ORIGIN	Freight Terms Prepaid		Carrier MANITOULIN		BOL No 2911792-2	

Shipment Details	Final Destination Branch - TOR
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Order No 4280695	Line No 1	Item No 14998.MO	Description 4.5000.RD.17CR-4NI.STAINLESS.RT.SOL TR.COND A.132.0000-156.0000 CUT TO 5.1 IN (+ .1250/-.0000 IN) - BAND SAW CUTTING SPECIFICATIONS: AMS 5643 ALL PAPERWORK MUST FOLLOW ORDER / CUSTOMER MUST RECEIVE AT TIME OF DELIVERY ALL MATERIAL MUST HAVE IDENTIFYING MARKINGS EX:HEAT #'S Email P/s and certs to: clavoie@dartaero.com				
Purchase Order No 31638		Part Number YOUR ITEM NUMBER: D6104-007		Ordered Qty 12.00 PCS		Invoice Qty 12.00 PCS	
Details		ALL PAPERWORK MUST FOLLOW ORDER / CUSTOMER MUST RECEIVE AT TIME OF DELIVERY ALL MATERIAL MUST HAVE IDENTIFYING MARKINGS EX:HEAT #'S Email P/s and certs to: clavoie@dartaero.com END USER: DART AEROSPACE END USE: COMMERCIAL AIRCRAFT PARTS SP/6 CB-14					
Delivery No. 120367956	Mill NORTH AMERICAN STAINLESS	Heat Number 	Mech Id	PCS 12	Width (IN)	Length (IN)	Shipped Qty(LBS) 283.7116

These commodities, technology or software were exported from the United States in accordance with the Export Administration Regulations. Diversion contrary to US law prohibited.
Date Printed: 11-MAR-2016 05:23:18 PM



Castle Metals®

A. M. Castle & Co.

**PACKING SLIP/
CERTIFICATE OF CONFORMANCE**

Page 2 of 2

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These commodities/technologies are subject to US Export Administration & US State Dept. Regulations and, if intended for export, were/are exported thereunder. Diversion contrary to US Law is Prohibited.

We hereby certify the material covered by this certification conforms in accordance with the above specifications and has been found to meet the applicable requirements for the material, including any specifications forming a part of the description. Test reports are on file subject to examination. All claims for defective material are waived unless made in writing to A.M. Castle & Co. within 60 days of the shipment. Material cut to the correct size, or material cut by the customer cannot be returned for credit.

Reviewed by Authorized Castle Metals Representative:

GA

Date:

Name:

MAR 11 2016



SP/6-03-14



NORTH AMERICAN
STAINLESS

METALLURGICAL TEST REPORT

6870 Highway 42 East
Ghent, KY 41045-9615
(502) 347-6000

Certificate: 991455 16

Mail To:

A.M. CASTLE AND COMPANY
1420 KENSINGTON ROAD-SUITE 220
OAK BROOK IL 60523

Ship To:

A.M. CASTLE AND COMPANY
3400 NORTH WOLF ROAD
FRANKLIN PARK IL 60131

Date: 10/01/2014 Page: 1 OF 1

Customer: 0032 001

NAS Order: LP 25597 1

Your Order: 303917

Item Code: 14998

Steel: 630(17-4)

Finish: HOT Finish

Dia/Thk: 4.5000 in

Leg Length:

Length: 144.00 in

Corrosion:

PRODUCT DESCRIPTION:

AMS 2303E, AMS 5643R
Round Bar, Hot Rolled, Annealed, Rough Turned
UNS S17400, EN 10204 3.1, ASTM A484/11, MACRO OK, AMS 5643T
ASTM A564/10, AMS 2303, ASME SA564-07, ASTM F899/11 (CHEM ONLY)
SOL. ANNEALED @ 1900F MIN FOR 1 HR MIN. and air cooled to RT
H900 MECH. PROPERTIES ARE CAPABILITY ONLY*

REMARKS:

COMPLIES W/REQUIREMENTS OF DPAR 252.225-7009 EU DIRECTIVE
2011/65/EU. RoHS. EAF+AOD+CC. NO WELD REPAIR. MELTED AND MFG
IN USA FREE FROM MERCURY AND LOW MELTING ALLOY CONTAMINATION

DAS
14

16/03/15

Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight
BG67493	1945								

CHEMICAL ANALYSIS

CM(Country of Melt) ES(Spain) US(United States) ZA(South Africa) JP(Japan)

Chemical Analysis per ASTM A751/08

Heat	Supplier #	CM	C %	CB %	CO %	CR %	CU %	MN %	MO %	N %	NI %	P %
N5T6		US	.016	.286	.10	15.14	3.07	.77	.14	.036	4.43	.025
			S %	SI %	TA %	TI %						
			.0225	.39	.0050	.0020						

MECHANICAL PROPERTIES

1 o r	d i r	HB No.	Grain No.	Ferrite %	TS-900CAP KSI	YS-900CAP KSI	E1-900CAP % 4D	RA-900CAP %	RC-900CAP No.	FREQ. No.	SEV. No.
BG67493	R L	321.0	7.0	.20	196.03	175.33	14.43	44.06	41.0	.17	.10

NAS hereby certifies that the analysis on this certification is correct. Based upon the results and the accuracy of the test methods used, the material meets the specifications stated. These results relate only to the items tested and this report cannot be reproduced, except in its entirety, without the written approval of NAS

Technical
Dept. Mgr.

ABHIJEET BHAVE

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: D6104-007
DATE: 16/03/15

PO / BATCH NO: 31638/142433

MATERIAL CERT REC'D: yes
QUANTITY RECEIVED: 12
QUANTITY INSPECTED: 12
QUANTITY REJECTED: _____

THICKNESS ORDERED: 04.50 X 5.10
THICKNESS RECEIVED: 04.550 X 5.230
SHEET SIZE ORDERED: _____
SHEET SIZE RECEIVED: _____

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	☒ N	
CORRECT FINISH	☒ Y	N	
CORROSION	Y	☒ N	
CORRECT GRAIN DIRECTION	☒ Y	N	
CORRECT MATERIAL	☒ Y	N	
CORRECT THICKNESS	☒ Y	N	
PHOTO REQUIRED	Y	☒ N	
CORRECT MATERIAL	☒ Y	N	
CORRECT REF # TO LINK CERT	☒ Y	N	
CORRECT MATERIAL IDENTIFICATION	☒ Y	N	
CORRECT M# ON THE MATERIAL	☒ Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	☒ N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	☒ N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK RECORD RESULTS BELOW				
TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING	HRC	HRB	DUR A	DUR D

testers located in the Quality Office

QC 18 INSPECTION		ENGINEERING SIGNOFF (if required)	
INSPECTED BY: <u>DAS</u>	SIGNED OFF BY: _____		
DATE: <u>16/03/15</u>	DATE: _____		

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

MATERIAL RECEIPT INSPECTION FORM

INSTRUCTIONS FOR INSPECTING BAR, TUBING, ROUND, & SHEET STOCK

- 1- VERIFY STOCK TO DART PURCHASE ORDER
- 2- MEASURE ALL DIMENSIONS FOR EACH PURCHASED STOCK
 - a WIDTH, THICKNESS, DIAMETER, WALL THICKNESS & LENGTH
- 3- VERIFY CONDITION OF MATERIAL i.e. DAMAGED, CORRODED, etc
- 4- VERIFY THAT SUPPLIER HAS A NUMBER (HEAT #) ON ITS RECEIVING REPORT TO LINK TO MATERIAL CERTS
- 5- VERIFY MATERIAL CERTS ARE CORRECT TO THE DART PO INSTRUCTIONS
- 6- REMOVE / CUT A PIECE OF MATERIAL FOR SAMPLE HARDNESS TESTING

INSTRUCTIONS FOR INSPECTING SKIDTUBE & STEP EXTRUSION

- 1- VERIFY TO DART SUPPLIED DRAWING
- 2- SAMPLE INSPECT MATERIAL IN BUNDLE TO ENSURE MATERIAL CAN BE RECEIVED INTO DART
- 3- USING PORTABLE HARDNESS TESTER VERIFY HARDNESS OF THE MATERIAL TO THE DRAWING
- 4- VERIFY THAT MATERIAL CERTS MATCH TO WHATS CALLED UP ON THE DART DRAWING

AFTER MATERIAL PASSES INSPECTION

- 5- HAVE DART EMPLOYEES START STOCKING MATERIAL BUT REQUEST MIN 20pcs FOR FULL INSPECTION
- 6- INSPECT ALL DIMS AS PER DRAWING REQUIREMENTS

INSTRUCTIONS FOR INSPECTING CROSS TUBE MATERIAL

- 1- VERIFY MATERIAL CERTS MATCH THE REQUIREMENTS ON THE DART DRAWINGS
- 2- INSPECT MIN HALF THE BATCH OF EXTRUSION RECEIVED INTO DART
- 3- INSPECT MATERIAL AS PER THE EXTRUSION REPORT
 - a WALL THICKNESS USING ULTRA-SONIC IN 4 LOCATIONS
 - b OUTSIDE DIAMETER HIGHEST/LOWEST BOTH ENDS
 - c INSIDE DIAMETER HIGHEST/LOWEST BOTH ENDS
 - d STRAIGHTNESS @ CENTER OVER 12" SPAN
 - e WALL THICKNESS USING TUBE MICROMETER HIGHEST/LOWEST BOTH ENDS
- 4- IDENTIFY EACH TUBE IN SEQUENCE OF INSPECTING (TUBE 1, TUBE2 ...) AND W/O# AND PO#
- 5- RECORD ALL FINDINGS ON EXTRUSION REPORT

IF ANY QUESTIONS PLEASE SEE QC COORDINATOR BEFORE GOING FURTHER